

## Advanced Materials

# Araldite® AV 5308 / Hardener HV 5309-1

Structural Adhesives

### TECHNICAL DATA SHEET

## Araldite® AV 5308 / Hardener HV 5309-1 Two component epoxy paste adhesive

### Key properties

- Toughened paste
- Ideal for bonding GRP, SMC and dissimilar substrates
- Low shrinkage
- Gap filling, non sagging up to 10mm thickness
- High shear and peel strength

### Description

Araldite® AV 5308 / Hardener HV 5309-1 is a two component, room temperature curing paste adhesive giving a resilient bond. It is thixotropic and non sagging up to 10mm thickness. It is particularly suitable for SMC and GRP bonding.

### Product data

Property	Araldite® AV 5308	Hardener HV 5309-1	Mixed Adhesive
Colour - visual (A112)*	Smooth beige paste	Smooth cream paste	beige paste
Specific gravity	1.4	1.4	1.4
Viscosity at 25°C (Pas)	thixotropic	thixotropic	thixotropic
Lap shear strength at 25°C (A501)*	-	-	> 15 MPa
Pot Life (100 gm at 25°C)	-	-	30 - 40 minutes

\* Specified data are on a regular basis analysed. Data which is described in this document as 'typical' is not analysed on a regular basis and is given for information purposes only. Data values are not guaranteed or warranted unless if specifically mentioned.

### Processing

#### Pretreatment

The strength and durability of a bonded joint are dependent on proper treatment of the surfaces to be bonded.

At the very least, joint surfaces should be cleaned with a good degreasing agent such as acetone, iso-propanol (for plastics) or other proprietary degreasing agents in order to remove all traces of oil, grease and dirt.

Low grade alcohol, gasoline (petrol) or paint thinners should never be used.

The strongest and most durable joints are obtained by either mechanically abrading or chemically etching ("pickling") the degreased surfaces. Abrading should be followed by a second degreasing treatment.

Mix ratio	Parts by weight	Parts by volume
Araldite® AV 5308	100	100
Hardener HV 5309-1	100	100

**Application of adhesive**

The resin/hardener mix may be applied manually or robotically to the pretreated and dry joint surfaces. Huntsman's technical support group can assist the user in the selection of a suitable application method as well as suggest a variety of reputable companies that manufacture and service adhesive dispensing equipment.

A layer of adhesive 0.05 to 0.10 mm thick will normally impart the greatest lap shear strength to the joint. Huntsman stresses that proper adhesive joint design is also critical for a durable bond. The joint components should be assembled and secured in a fixed position as soon as the adhesive has been applied.

For more detailed explanations regarding surface preparation and pretreatment, adhesive joint design, and the dual syringe dispensing system, visit [www.araldite2000plus.com](http://www.araldite2000plus.com).

**Equipment maintenance**

All tools should be cleaned with hot water and soap before adhesives residues have had time to cure. The removal of cured residues is a difficult and time-consuming operation.

If solvents such as acetone are used for cleaning, operatives should take the appropriate precautions and, in addition, avoid skin and eye contact.

**Typical times to minimum shear strength**

Temperature	°C	10	15	23	40	60	100
Cure time to reach	hours	12	7.5	4	1	-	-
LSS > 1MPa	minutes	-	-	-	-	17	6
Cure time to reach	hours	21	13	6	2	-	-
LSS > 10MPa	minutes	-	-	-	-	35	7

LSS = Lap shear strength.

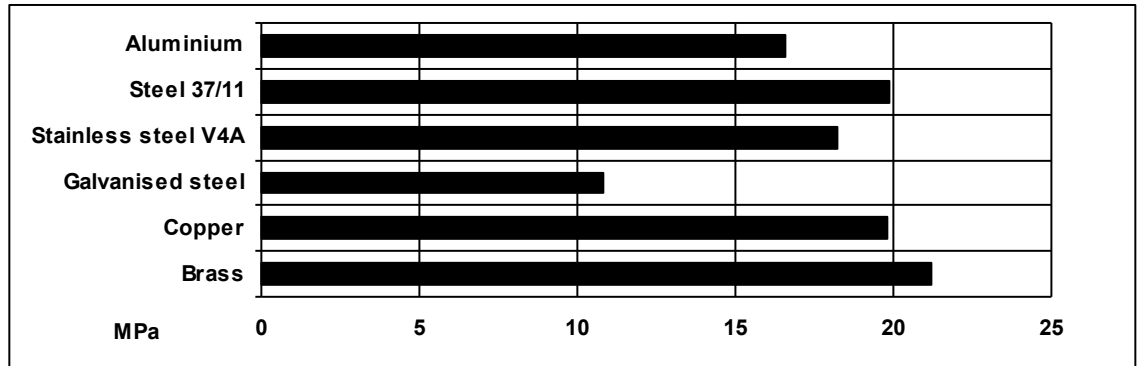
**Typical cured properties**

Unless otherwise stated, the figures given below were all determined by testing standard specimens made by lap-jointing 114 x 25 x 1.6 mm strips of aluminium alloy. The joint area was 12.5 x 25 mm in each case.

The figures were determined with typical production batches using standard testing methods. They are provided solely as technical information and do not constitute a product specification.

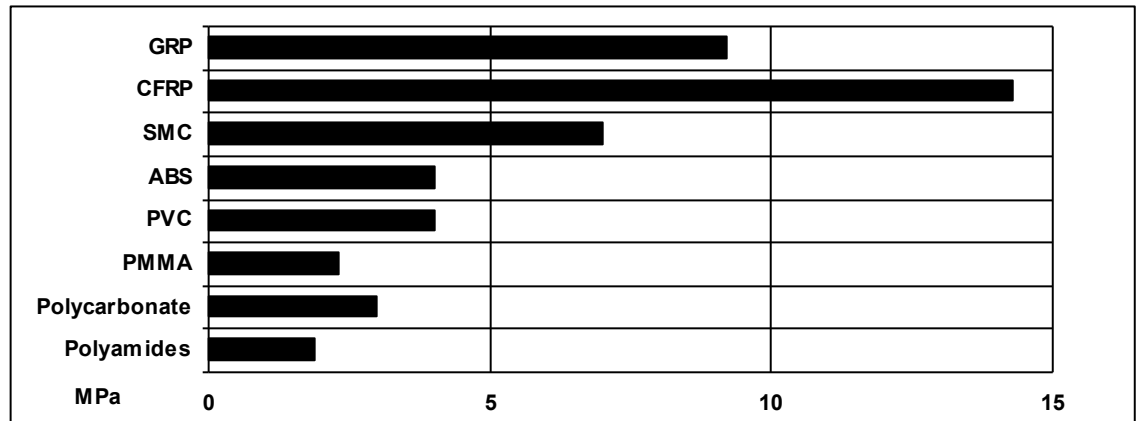
### Average lap shear strengths of typical metal-to-metal joints (ISO 4587) (typical average values)

Cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting



### Average lap shear strengths of typical plastic-to-plastic joints (ISO 4587) (typical average values)

Cured for 16 hours at 40°C and tested at 23°C. Pretreatment – Lightly abrade and alcohol de-grease

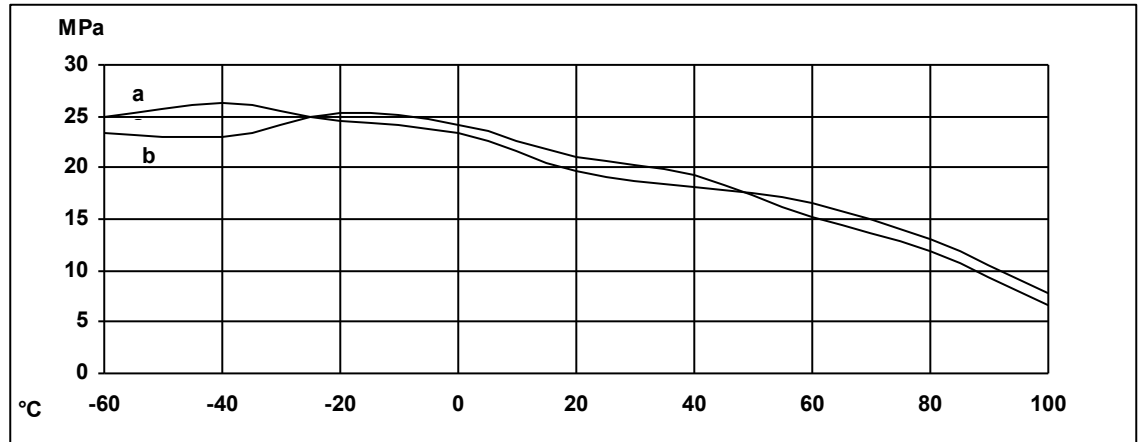


### Tensile properties (ISO 527). Cure 16hrs at 40°C (typical average values)- tested at 23°C

Tensile strength	30 MPa
Tensile modulus	2 GPa
Elongation at break	4.4 %

**Lap shear strength versus temperature (ISO 4587) (typical average values)**

On aluminium. Pretreatment - Sand blasting. Cure: (a) = 7 days at 23°C; (b) = 24 hours at 23°C + 30 minutes at 80°C



**Roller peel test (ISO 4578) (typical average values)**

On aluminium sandblasted, cured: 16 hours at 40°C

4 N/mm

**Glass transition temperature (typical average values) ( ISO 11357-2)**

Cure: 16 hours at 40°C

67°C by DSC

Cure: 1 hour at 80°C

87°C/DMA (ISO6721)

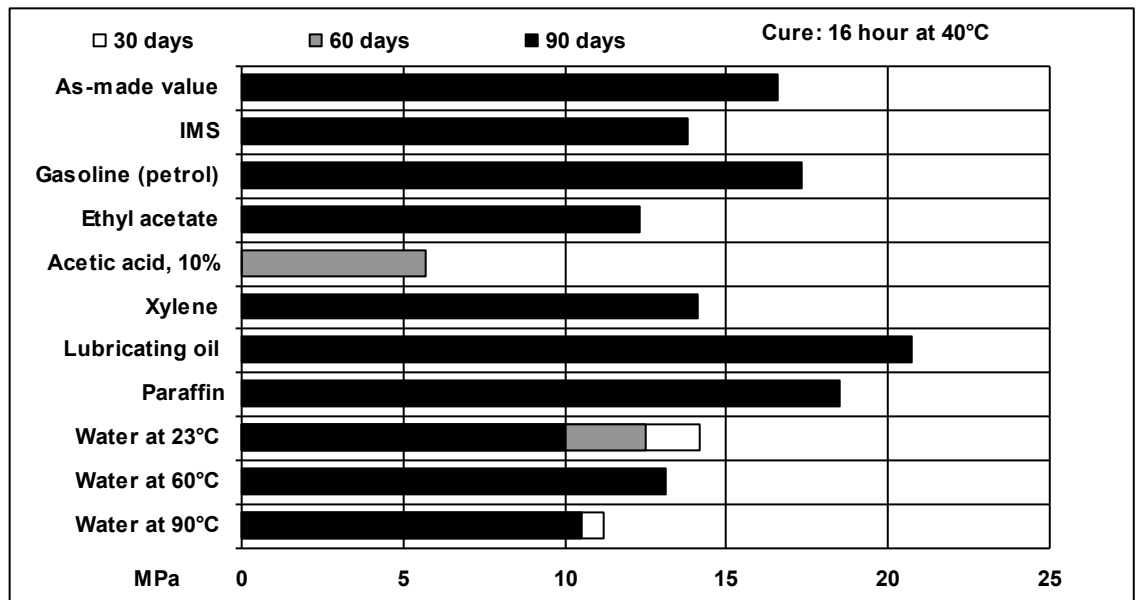
Dielectric constant (500v at 25°C) DIN 53445

5.6 at 1 kHz

**Lap shear strength versus immersion in various media (ISO 4587) (typical average values)**

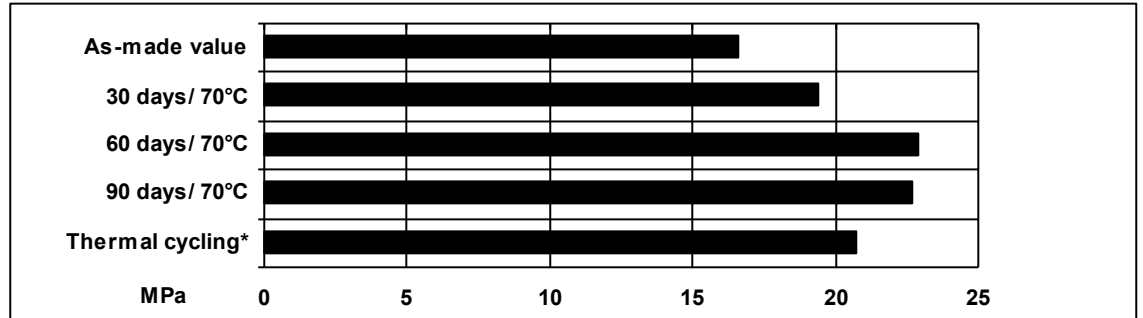
On aluminium, cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting

Unless otherwise stated, L.S.S. was determined after immersion for 30, 60 and 90 days at 23°C



### Lap shear strength versus heat ageing (ISO4587) (typical average values)

On aluminium, cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting



\*25 cycles -30°C to + 70°C

### Shear modulus (DIN 53445) (typical average values). Cure: 1 hour at 80°C

Temperature	G'	Δ
0°C	1.0 Gpa	0.25
25°C	0.9 Gpa	0.25
50°C	0.8 Gpa	0.35
75°C	0.2 Gpa	1.9
100°C	2 MPa	0.5

### Flexural Properties (ISO 178) (typical average values). Cure 16 hours at 40°C , tested at 23°C

Flexural Strength	42 MPa
Flexural Modulus	1810 MPa

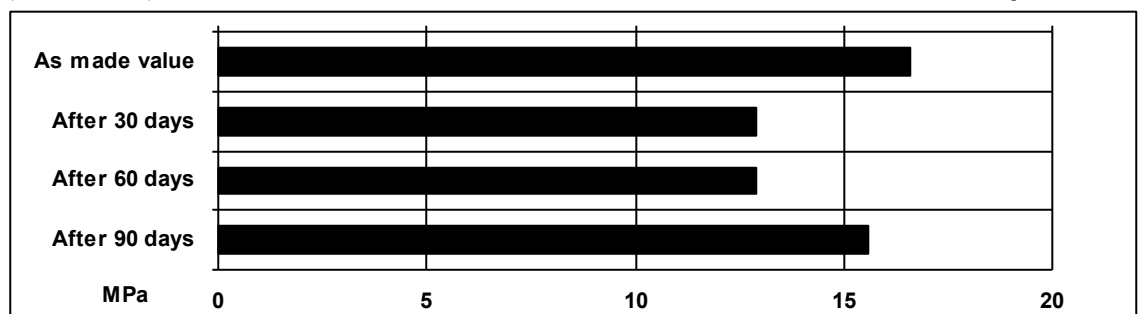
### Resistance to fatigue (40 Hz at 23°C) (quoted as cycles to failure)

Maximum applied load	Sandblasted aluminium	Chromate pickled aluminium
20% of static failing load	>10 <sup>7</sup>	>10 <sup>7</sup>
25% of static failing load	>10 <sup>7</sup>	10 <sup>7</sup>
30% of static failing load	3 x 10 <sup>6</sup>	8 x 10 <sup>5</sup>

(Static failing load 16 MPa)

### Lap shear strength versus tropical weathering (ISO 4587) (typical average values)

(40°C/92% RH) On aluminium, cured for 16 hours at 40°C and tested at 23°C. Pretreatment - Sand blasting



**Storage**

Araldite® AV 5308 and Hardener HV 5309-1 must be stored at room temperature provided the components are stored in sealed containers. The expiry date is indicated on the label.

**Handling precautions****Caution**

Our products are generally quite harmless to handle provided that certain precautions normally taken when handling chemicals are observed. The uncured materials must not, for instance, be allowed to come into contact with foodstuffs or food utensils, and measures should be taken to prevent the uncured materials from coming in contact with the skin, since people with particularly sensitive skin may be affected. The wearing of impervious rubber or plastic gloves will normally be necessary; likewise the use of eye protection. The skin should be thoroughly cleansed at the end of each working period by washing with soap and warm water. The use of solvents is to be avoided. Disposable paper - not cloth towels - should be used to dry the skin. Adequate ventilation of the working area is recommended. These precautions are described in greater detail in the Material Safety Data sheets for the individual products and should be referred to for fuller information.



Huntsman Advanced Materials warrants only that its products meet the specifications agreed with the user. Specified data are analysed on a regular basis. Data which is described in this document as 'typical' or 'guideline' is not analysed on a regular basis and is given for information purposes only. Data values are not guaranteed or warranted unless if specifically mentioned.

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**Huntsman Advanced Materials**  
(Switzerland) GmbH  
Klybeckstrasse 200  
4057 Basel  
Switzerland

Tel: +41 (0)61 299 11 11  
Fax: +41 (0)61 299 11 12

[www.huntsman.com/advanced\\_materials](http://www.huntsman.com/advanced_materials)